



Clean Michigan Initiative
Nonpoint Source
 Tracking code 2005-0003



City of Alpena
 Telephone: 989-354-1700
 Fax: 989-354-1709
 Email: richs@alpena.mi.us

Water Tower Park Shoreline Stabilization Project

October 2005 through May 2007

The improvements implemented by the Water Tower Park Shoreline Stabilization Project greatly reduced the erosion occurring within the park along the Thunder Bay River shoreline. Erosion used to occur as the result of fishing activity and heavy foot traffic by anglers accessing the shoreline, wearing away the vegetative cover. This foot traffic exposed the bare soils along the shoreline to the wave and current action of the river, which was exacerbated by the influence of the Ninth Avenue dam located immediately upstream from the project. The Water Tower Park shoreline represents the only publicly owned parcel on the north side of the river for approximately 3,800 feet downstream from the dam; therefore it provides a critical access point to the River. The Thunder Bay River is obstructed immediately upstream from the park by the Ninth Avenue Dam. As such, all fish migrations upstream terminate at the dam, making this section of the river popular for shoreline fishing activities.



Grant Amount: \$150,000
Match Funds: \$ 87,800

Total Amount: \$237,800

Best Management Practices:

- 7,970 cubic feet of Rain Gardens
- 630 square feet Porous Pavement
- 0.8 acres of Grassed Swale
- 2 sets of Access Steps
- 312 Feet of Split Rail Fence
- 630 Linear Feet of Shoreline Stabilization



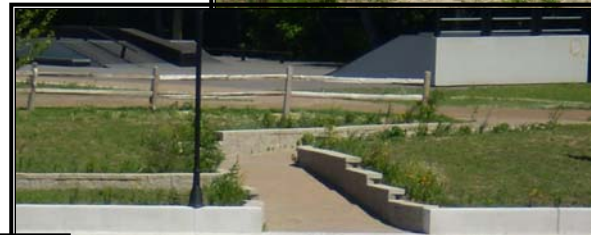
Annual Load Reductions:

- 23 Tons of Sediment
- 35 Pounds of Phosphorous
- 69 Pounds of Nitrogen





Before: River access for fishermen was through brush down steep banks. This caused the ground cover to be disturbed and erosion to occur over time.



After: Through the installation of porous, barrier-free walkways and concrete steps, fishermen have safe access to the river from parking areas. Access has been guided toward these access points through the use of split rail fence and illuminated walkways.



Before: The steep banks adjacent to the river caused soil erosion. In addition, sheet flow from the adjacent park contributed phosphorus and nitrogen due to park maintenance operations.



After: The installation of rain gardens on the slope helps filter storm water; grassed swales on the slope help direct storm water to stabilized areas; porous pavement in the parking lot promotes infiltration; tiered retaining walls reduce the slope of the bank. Collectively, these practices reduce harmful runoff from reaching the river. River bank scour was also eliminated by installing stone riprap along the shoreline.

